

Appl. No.: 09/592,950
Amdt. Dated: November 12, 2003
Reply to Office action of August 12, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-16 (cancelled).

Claim 17 (previously presented): A fuel cell system, comprising:

- a plurality of fuel cells forming a fuel cell stack having a main fuel inlet, each fuel cell comprising:

- an inlet for a fuel, the fuel inlet of the fuel cell being connected to the main fuel inlet of the fuel cell stack;

- an anode having an anode catalyst associated therewith for producing cations from the fuel;

- a fuel manifold, connected between the main fuel inlet and the anode, for distributing the fuel to the anode;

- an oxidant inlet means for supplying an oxidant;

- a cathode having a cathode catalyst associated therewith and connected to the oxidant inlet means, for producing anions from the oxidant, said anions reacting with said cations to form water on said cathode;

- an ion exchange membrane deposited between said anode and said cathode, said membrane facilitating migration of cations from said anode to said cathode, while isolating the fuel and the oxidant from one another; and

- a catalytic reactor having a first inlet for the fuel and a second inlet for the oxidant, and an outlet for remaining gas that has been heated and humidified, the outlet of the catalytic reactor being connected by a first control valve to the main fuel inlet of the fuel cell stack and by a second control valve to the oxidant inlet means whereby, in use, the outlet of the catalytic reactor can be selectively connected to one of the main fuel inlet and the oxidant inlet means, with supply of the oxidant and the fuel to the

catalytic reactor adjusted so that the heated and humidified gas at the outlet of the catalytic reactor includes an excess of gas corresponding to said one of the main fuel inlet and the oxidant inlet means.

Claim 18 (previously presented): A fuel cell system as claimed in claim 17, which includes a fuel supply line connected to the catalytic reactor and an air supply line connected to the catalytic reactor, each of the fuel supply line and the air supply line including, at least one of a pressure gauge, a flow meter and a non-return valve.

Claim 19 (previously presented): A fuel cell system, comprising:

- a plurality of fuel cells forming a fuel cell stack having a main fuel inlet, each fuel cell comprising:

- an inlet for a fuel, the fuel inlet of the fuel cell being connected to the main fuel inlet of the fuel cell stack;

- an anode having an anode catalyst associated therewith for producing cations from the fuel;

- a fuel manifold, connected between the main fuel inlet and the anode, for distributing the fuel to the anode;

- an oxidant inlet means for supplying an oxidant;

- a cathode having a cathode catalyst associated therewith and connected to the oxidant inlet means, for producing anions from the oxidant, said anions reacting with said cations to form water on said cathode;

- an ion exchange membrane deposited between said anode and said cathode, said membrane facilitating migration of cations from said anode to said cathode, while isolating the fuel and the oxidant from one another; and

- a catalytic reactor having a first inlet for the fuel and a second inlet for the oxidant, and an outlet for remaining gas that has been heated and humidified, the catalytic reactor being connected to the main fuel inlet, whereby, in use, with the fuel and the oxidant supplied to the catalytic reactor and the fuel being supplied in excess of the stoichiometric amount, the remaining, heated and humidified gas comprises heated and humidified fuel and is supplied from the catalytic reactor to the main fuel inlet,